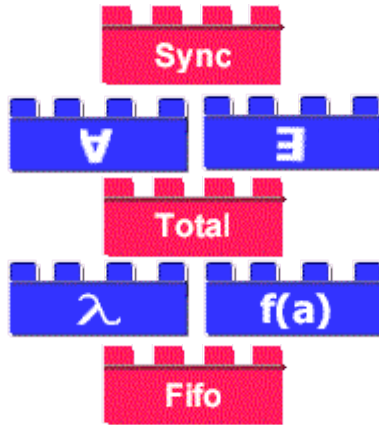


Integrating Programs and Logic



Impact

- Delivery of a means to correctly optimize Ensemble layers will demonstrate that formal methods can enhance real system performance.
- Proving the defining properties of key Ensemble layers will greatly enhance confidence in that system and its applications as well as increase its capabilities.
- Release of Ensemble with a Logical Programming Environment to support it will be a first of a kind model of how a

New Ideas

- Building a distributed communications system in a very expressive programming language with a formal semantics is the key first step for proving properties of actual system code.
- The key to effectively supporting a real system with formal methods is to build the system in a programming environment that seamlessly integrates proof technology.
- The modular structure of Ensemble enables collaborative verification based on a common formal semantics definable in several verification systems.

Schedule

1999

Fall

complete verification of ETO layer in Nuprl, specify EVS Layers, add to documentation of system

integrate Ensemble into prototype Logical Programming Environment (LPE)

begin formal proofs of EVS properties

2000

Spring

complete proofs of EVS properties, add to documentation for system

integrate fastpath optimizer from Nuprl into LPE

Fall

synthesize correct Ensemble layer from correctness proof

Ensemble

release integrated Logical Programming Environment for

with formal documentation libraries and packaged layer